



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,260	10/01/2001	Veronique Zimpfer	109555	5142
25944	7590	05/19/2005	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			DO, CHAT C	
			ART UNIT	PAPER NUMBER
			2193	

DATE MAILED: 05/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/966,260

Applicant(s)

ZIMPFER ET AL.

Examiner

Chat C. Do

Art Unit

2193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is responsive to Amendment filed 12/22/2004.
2. Claims 1-15 are pending in this application. Claims 1-3 are independent claims. In Amendment, claims 13-15 are added. This Office Action is made final.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 2, 5, 8, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by the admitted prior art.

Re claim 2, the admitted prior art discloses in pages 1-2 of the present invention a calculation method for producing a recursive digital filter (e.g. 0001), the method implemented in a signal processor working with integers, comprising calculating (e.g. using the transfer function $F(Z)$ in page 1) an output signal of sample n based on an algebraic sum of input and output values of signals sampled at a selected point in time considered and at previous points in time (e.g. equation of $y(n)$ in page 1), to which coefficients characteristic of the filter have been assigned (e.g. a_i and b_i in page 1); and applying a chosen scale factor (e.g. K) to remainders of integer divisions, the remainders

being the result of calculating the output values of the previous samples (e.g. output of signal after going through $1/K$).

Re claim 5, the admitted prior art further discloses in pages 1-2 of the recursive digital filter (lines 5-6 in page 1) produced by using the calculation (Figure 1 with feedback system and page 2 lines 1-3).

Re claim 8, the admitted prior art further discloses in pages 1-2 of the present invention an active sound protection system (lines 7-9 in page 1) using the calculation.

Re claim 11, the admitted prior art further discloses in pages 1-2 of the present invention a negative feedback regulation system (lines 7-9 in page 1) using the recursive digital.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 3-4, 6-7, 9-10, and 12 are rejected under 35 U.S.C. 103(a) as being obvious over the admitted prior art in view of Zandi et al. (U.S. 6,216,145).

Re claim 1, the admitted prior art discloses in pages 1-2 of the present invention a calculation method for producing a recursive digital filter (0001), the implemented in a signal processor working with integers, comprising calculating (using the transfer function $F(Z)$ in page 1) an output signal of sample n based on an algebraic sum of input

and output values of signals sampled at the point in time considered and at previous points in time (equation of $y(n)$ in page 1), to which coefficients characteristic of the filter have been assigned (a_i and b_i in page 1), applying a chosen scale factor (K) chosen is applied to the remainders of the integer divisions, the remainders being the result of calculating the output signals of the previous samples (output of signal after going through $1/K$). The admitted prior art does not disclose the other calculation stage rounding to the default integer value coming from dividing the output signal by the scale factor is replaced by rounding to the closest integer to the real-number quotient. However, Zandi et al. also disclose in Figure 6A a filter function (603) having a last calculation stage (604) to round the output result (output of 603) to the closest integer (output of round to integer box 604). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add a rounding calculation stage as seen in Zandi et al.'s invention into the admitted prior art's invention because it would enable to reduce error and provide the optimum solution.

Re claim 3, it has limitations cited in claim 1. Thus, claim 3 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 4, the admitted prior art further discloses in pages 1-2 of the present invention a digital filter (lines 5-6 in page 1) produced by using the calculation.

Re claim 6, it has limitations cited in claim 4. Thus, claim 6 is also rejected under the same rationale as cited in the rejection of rejected claim 4.

Re claim 7, the admitted prior art further discloses in pages 1-2 of the present invention an active sound protection system (lines 7-9 in page 1) using the calculation.

Re claim 9, it has limitations cited in claim 7. Thus, claim 9 is also rejected under the same rationale as cited in the rejection of rejected claim 7.

Re claim 10, the admitted prior art further discloses in pages 1-2 of the present invention a negative feedback regulation system (lines 7-9 in page 1) using the recursive digital.

Re claim 12, it has limitations cited in claim 10. Thus, claim 12 is also rejected under the same rationale as cited in the rejection of rejected claim 10.

7. Claims 13 and 15 are rejected under 35 U.S.C. 103(a) as being obvious over the admitted prior art in view of Zandi et al. (U.S. 6,216,145) as applied to claims 1 and 3 respectively above, and further in view of Marcian et al. (U.S. 3,619,586).

Re claim 13, the admitted prior art in view of Zandi et al. do not disclose the calculating and applying steps are performed during a single cycle of the recursive digital filter. However, Marcian et al. disclose in Figure 5 a method of performing recursive digital filter in a single cycle (e.g. abstract and col. 8 lines 45-60). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to perform the recursive digital filter in a single cycle as cited in Marcian's invention into the admitted prior art in view of Zandi et al.'s invention because it would enable to produce the result of the recursive digital cyclically faster.

Re claim 15, it has limitations cited in claim 13. Thus, claim 15 is also rejected under the same rationale as cited in the rejection of rejected claim 13.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being obvious over the admitted prior art in view of Marcian et al. (U.S. 3,619,586).

Re claim 14, the admitted prior art does not disclose the calculating and applying steps are performed during a single cycle of the recursive digital filter. However, Marcian et al. disclose in Figure 5 a method of performing recursive digital filter in a single cycle (e.g. abstract and col. 8 lines 45-60). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to perform the recursive digital filter in a single cycle as cited in Marcian's invention into the admitted prior art's invention because it would enable to produce the result of the recursive digital cyclically faster.

Response to Arguments

9. Applicant's arguments filed 12/22/2004 have been fully considered but they are not persuasive.

a. The applicant argues in page 5 for claims 3, 6, 9, and 12 that the last Office action incorrectly rejected claim 3 because claim 3 does not recite "wherein the stage is coupled with two other.... of the previous samples" as cited in the rejection.

The examiner respectfully submits that a typo of numbering claims was existed in the last Office action. Claims {1, 4, 7, 10} and {3, 6, 9, 12} are rejected under 103 as obvious over the admitted prior art in view Zandi et al. Claims {2, 5, 8, 11} are rejected under 102 as anticipated over the admitted prior art as clearly corrected in the above rejection. Since claim 3 has same limitations as cited in

claim 1, claim 3 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

- b. The applicant argues in page 6 second paragraph for claims 1-2 that the admitted prior art does not disclose a step of applying a chosen scale factor to remainders of integer divisions wherein the remainders being a result of calculating the output of values of the previous samples.

The examiner respectfully submits that the admitted prior art clearly discloses teaches a step of applying a chosen scale factor to remainders of integer divisions wherein the remainders being a result of calculating the output of values of the previous samples in the transfer function $F(Z)$ and temporal function $y(n)$ in page 1 under the background of the invention wherein the scale factor is $1/K$ and the remainder of division is summation of b_i over summation of a_j . The previous samples are described in the transfer function with Z^{-1} as indicating a delay version (e.g. one unit) of the samples.

- c. The applicant argues in page 6 fourth paragraph for claims 1-2, 4-5, 7-8, 10-11 that the admitted prior art does not disclose the “applying a chosen scale factor” or “changing a number” features of claims 1 and 3, nor the zandi’s reference.

The examiner respectfully submits that inherently all the scale factors cited in the transfer function $F(Z)$ and temporal function $y(n)$ of the admitted prior art must be chosen mathematically for optimizing the recursive filter in the applications.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

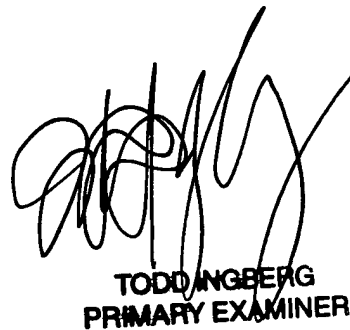
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on M => F from 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

May 11, 2005

Chat C. Do
Examiner
Art Unit 2193



TODD INGERBERG
PRIMARY EXAMINER